Comparisons of Job Characteristics

Focus Occupation: Chemists (19-2031)
Associated Occupation: Chemical Engineers (17-2041)

Compare Knowledge
Compare Skills
Compare Abilities
Compare Detailed Work Activities
Compare Tools and Technologies

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

Knowledge

Similarity of Focus Occupation to Associated Occupation: 75

Focus Occupation: Chemists (19-2031)
Associated Occupation: Chemical Engineers (17-2041)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Engineering and Technology	5.7	24.1	9.8	<<	Extensive education and/or training may be required
Chemistry	4.8	20.5	21.8	0	Current knowledge level may be sufficient
Mathematics	9.2	19.4	17.0	<	Expanded education and/or training may be required
Physics	4.3	16.9	9.1	<<	Extensive education and/or training may be required
Production and Processing	6.0	15.4	11.3	<<	Extensive education and/or training may be required
Design	5.2	15.2	4.1	<<	Extensive education and/or training may be required
Administration and Management	8.4	12.7	9.0	<<	Extensive education and/or training may be required
Biology	3.7	9.6	6.8	<<	Extensive education and/or training may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 74

Focus Occupation: Chemists (19-2031)
Associated Occupation: Chemical Engineers (17-2041)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Science	4.5	18.0	17.3	0	Current skill level may be sufficient
Mathematics	6.2	14.7	11.4	<<	Extensive development of skills in this area may be required

Judgment and Decision Making	9.4	14.6	10.2	<<	Extensive development of skills in this area may be required
Complex Problem Solving	9.1	14.5	12.3	<	A higher skill level may be required
Systems Analysis	6.5	14.1	8.6	<<	Extensive development of skills in this area may be required
Operations Analysis	5.0	13.5	7.9	<<	Extensive development of skills in this area may be required
Systems Evaluation	6.4	13.4	7.2	<<	Extensive development of skills in this area may be required
Troubleshooting	4.5	10.4	6.2	<<	Extensive development of skills in this area may be required
Technology Design	2.6	8.5	2.9	<<	Extensive development of skills in this area may be required
Management of Financial Resources	3.3	7.4	4.1	<<	Extensive development of skills in this area may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities

Similarity of Focus Occupation to Associated Occupation: 93

Focus Occupation: Chemists (19-2031)
Associated Occupation: Chemical Engineers (17-2041)

Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Oral Comprehension	12.5	15.8	15.9	0	Current ability level may be sufficient
Category Flexibility	9.0	15.2	13.6	<	Some improvement in abilities may be required
Deductive Reasoning	10.6	15.2	13.6	<	Some improvement in abilities may be required
Information Ordering	9.9	15.1	12.8	<	Some improvement in abilities may be required
Problem Sensitivity	11.1	14.8	12.9	<	Some improvement in abilities may be required
Inductive Reasoning	10.2	14.6	13.8	0	Current ability level may be sufficient
Mathematical Reasoning	6.3	14.2	12.2	<	Some improvement in abilities may be required
Number Facility	6.3	13.4	11.9	<	Some improvement in abilities may be required
Originality	7.6	13.0	9.3	<<	Extensive improvement in abilities may be required
Visualization	7.5	11.7	9.1	<	Some improvement in abilities may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 91

Focus Occupation: Chemists (19-2031)
Associated Occupation: Chemical Engineers (17-2041)

Work Activities	Exclusivity of Activity
Adhere to safety procedures	12
Advise clients or customers	19
Analyze chemical experimental, test, or analysis data or findings	69
Analyze scientific research data or investigative findings	27
Analyze test data	64
Collect scientific or technical data	30
Communicate technical information	4
Conduct laboratory research or experiments	57
Conduct standardized qualitative laboratory analyses	62
Conduct standardized quantitative laboratory analyses	62
Confer with engineering, technical or manufacturing personnel	25
Confer with research personnel	50
Confer with scientists	54
Design manufacturing processes or methods	77
Develop new chemical processing techniques or formulas	95
Develop or maintain databases	30
Develop plans for programs or projects	31
Develop policies, procedures, methods, or standards	21
Develop tables depicting data	33
Direct and coordinate activities of workers or staff	3
Direct and coordinate scientific research or investigative studies	27
Direct implementation of new procedures, policies, or programs	60
Evaluate manufacturing or processing systems	68
Explain complex mathematical information	30
Follow safe waste disposal procedures	50
Plan scientific research or investigative studies	48
Prepare reports	8
Prepare technical reports or related documentation	22
Resolve engineering or science problems	46
Understand properties of gases or liquids	78
Use chemical processing emergency procedures	84
Use chemical testing or analysis procedures	54
Use computers to enter, access or retrieve data	3
Use government regulations	44
Use hazardous materials information	35
Use knowledge of investigation techniques	16
Use mathematical or statistical methods to identify or analyze problems	30
Use pollution control techniques	62
Use quantitative research methods	35
Use relational database software	26
Use scientific research methodology	21
Use spreadsheet software	18
Use word processing or desktop publishing software	17

Write business project or bid proposals	48

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 81

Focus Occupation: Chemists (19-2031)
Associated Occupation: Chemical Engineers (17-2041)

Tools and Technologies	Exclusivity
Business function specific software	1
Chromatographic measuring instruments and accessories	16
Computers	1
Content authoring and editing software	1
Data management and query software	1
Development software	4
Finance accounting and enterprise resource planning ERP software	2
Gas analyzers and monitors	10
Industry specific software	1
Laboratory centrifuges and accessories	13
Laboratory decanting and distilling and evaporating and extracting equipment and supplies	19
Laboratory mixing and stirring and shaking equipment and supplies	19
Pharmaceutical industry machinery and equipment and supplies	31
Pipettes and liquid handling equipment and supplies	16
Spectroscopic equipment	10
Viewing and observing instruments and accessories	4

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.